07-13-00

Practitioner's Docket No. 473-009548-US(PAR) **PATENT**

Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P. § 601, 7th ed.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): Wolfgang THEIMER, Udo GORTZ, Reza SERAFAT, Klaus RATEITSCHECK, Peter BUTH, Frank DUFHUES, Thomas DRUKE, Amir IMAM, Christian STEINERT

WARNING: *37 C.F.R. § 1.41(a)(1) points out:*

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors."

For (title): METHOD FOR INPUTTING DATA INTO A SYSTEM

CERTIFICATION UNDER 37 C.F.R. § 1.10*
(Express Mail label number is mandatory.)
(Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date July 12, 2000, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL336865452US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

June Adams
(type or print name of person mailing paper)

June Adams
Signature of person mailing paper

WARNING: *Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.*

WARNING: *Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).*
*"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

1. Type of Application

This new application is for a(n)

(check one applicable item below)

☒ Original (nonprovisional)

☐ Design

☐ Plant

WARNING: ***Do not*** *use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. § 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.*

WARNING: ***Do not*** *use this transmittal for the filing of a provisional application.*

NOTE: If one of the following 3 items apply, then complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED and a NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION.

☐ Divisional.

☐ Continuation.

☐ Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. §§ 119(e), 120, or 121)

NOTE: A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. § 112. Each prior application must also be:

(i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or

(ii) Complete as set forth in § 1.51(b); or

(iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or

(iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(f).

37 C.F.R. § 1.78(a)(1).

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

WARNING: *If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.*

WARNING: *When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application* ***must*** *be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).*

☐ The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed

A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

15 Pages of specification

3 Pages of claims

3 Sheets of drawing

WARNING: ***DO NOT*** *submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 C.F.R. § 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).*

NOTE: "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. § 1.84(c)).

(complete the following, if applicable)

☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. § 1.84(b).

☐ formal

☐ informal

B. Other Papers Enclosed

_____ Pages of declaration and power of attorney

1 Pages of abstract

1 Other Title Page

4. Additional papers enclosed

☐ Amendment to claims

☐ Cancel in this applications claims _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

☐ Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)

☒ Preliminary Amendment

☒ Information Disclosure Statement (37 C.F.R. § 1.98)

☒ Form PTO-1449 (PTO/SB/08A and 08B)

☒ Citations

☐ Declaration of Biological Deposit

☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.

☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative

☐ Special Comments

☐ Other

5. Declaration or oath (including power of attorney)

NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)-(3).

NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)-(4).

☐ Enclosed

Executed by

(check **all** *applicable boxes)*

☐ inventor(s).

☐ legal representative of inventor(s). 37 C.F.R. §§ 1.42 or 1.43.

☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.

☐ This is the petition required by 37 C.F.R. § 1.47 and the statement required by 37 C.F.R. § 1.47 is also attached. See item 13 below for fee.

☒ Not Enclosed.

NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

☒ Application is made by a person authorized under 37 C.F.R. § 1.41(c) on behalf of *all* the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 C.F.R. § 1.16(e) can be filed subsequently).

☐ Showing that the filing is authorized. *(not required unless called into question. 37 C.F.R. § 1.41(d))*

6. Inventorship Statement

WARNING: *If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.*

The inventorship for all the claims in this application are:

☐ The same.

or

☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,

- ☐ is submitted.
- ☐ will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of $130.00 required by 37 C.F.R. § 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 C.F.R. § 1.52(d).

☒ English

☐ Non-English

- ☐ The attached translation includes a statement that the translation is accurate. 37 C.F.R. § 1.52(d).

8. Assignment

☒ An assignment of the invention to Nokia Mobile Phones Ltd.

- ☐ is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.
- ☒ will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters-one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: *A newly executed "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.*

9. Certified Copy

Certified copy(ies) of application(s)

Country	Appln. No.	Filed
Germany	19933524.9	16 July 1999
Country	Appln. No.	Filed
Country	Appln. No.	Filed

from which priority is claimed

☐ is (are) attached.

☒ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 C.F.R. § 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. § 120 is itself entitled to priority from a prior foreign application, then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 C.F.R. § 1.16)

A. ☒ Regular application

CLAIMS AS FILED					
Number filed		Number Extra		Rate	Basic Fee 37 C.F.R. § 1.16(a) $ 690.00
Total Claims (37 C.F.R. § 1.16(c))	17 − 20 =	0	×	$ 18.00	0
Independent Claims (37 C.F.R. § 1.16(b))	1 − 3 =	0	×	$ 78.00	0
Multiple dependent claim(s), if any (37 C.F.R. § 1.16(d))			+	$260.00	

☐ Amendment cancelling extra claims is enclosed.

☒ Amendment deleting multiple-dependencies is enclosed.

☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 C.F.R. § 1.16(d).

Filing Fee Calculation $ 690.00

B. ☐ Design application ($310.00—37 C.F.R. § 1.16(f))

Filing Fee Calculation $_____

C. ☐ Plant application ($480.00—37 C.F.R. § 1.16(g))

Filing fee calculation $_____

11. Small Entity Statement(s)

☐ Statement(s) that this is a filing by a small entity under 37 C.F.R. § 1.9 and 1.27 is (are) attached.

WARNING: *"Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. § 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent or includes a copy of the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).*

WARNING: *"Small entity status must not be established when the person or persons signing the . . . statement can* ***unequivocally*** *make the required self-certification." M.P.E.P., § 509.03, 6th ed., rev. 2, July 1996 (emphasis added).*

(complete the following, if applicable)

☐ Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

35 U.S.C. § ☐ 119(e),
☐ 120,
☐ 121,
☐ 365(c),

and which status as a small entity is still proper and desired.

☐ A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of **A**, **B** or **C** above)

$_____

NOTE: Any excess of the full fee paid will be refunded if small entitiy status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 C.F.R. § 1.28(a).

12. Request for International-Type Search (37 C.F.R. § 1.104(d))

(complete, if applicable)

☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

☐ Not Enclosed

☐ No filing fee is to be paid at this time.
(This and the surcharge required by 37 C.F.R. § 1.16(e) can be paid subsequently.)

☒ Enclosed

☒ Filing fee $ 690.00

☐ Recording assignment ($40.00; 37 C.F.R. § 1.21(h)) (See attached "COVER SHEET FOR ASSIGNMENT ACCOMPANYING NEW APPLICATION".) $ _____

☐ Petition fee for filing by other than all the inventors or person on behalf of the inventor where inventor refused to sign or cannot be reached ($130.00; 37 C.F.R. §§ 1.47 and 1.17(i)) $ _____

☐ For processing an application with a specification in a non-English language ($130.00; 37 C.F.R. §§ 1.52(d) and 1.17(k)) $ _____

☐ Processing and retention fee ($130.00; 37 C.F.R. §§ 1.53(d) and 1.21(l)) $ _____

☐ Fee for international-type search report ($40.00; 37 C.F.R. § 1.21(e)) $ _____

NOTE: 37 C.F.R. § 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 C.F.R. § 1.53(f) and this, as well as the changes to 37 C.F.R. §§ 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed $ 690.00

14. Method of Payment of Fees

☒ Check in the amount of $ 690.00

☐ Charge Account No. _____ in the amount of $_____

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: *If no fees are to be paid on filing, the following items should not be completed.*

WARNING: *Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.*

[X] The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 16-1350 :

[X] 37 C.F.R. § 1.16(a), (f) or (g) (filing fees)

[X] 37 C.F.R. § 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

[X] 37 C.F.R. § 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)

[X] 37 C.F.R. § 1.17(a)(1)–(5) (extension fees pursuant to § 1.136(a)).

[ ] 37 C.F.R. § 1.17 (application processing fees)

NOTE: ". . .A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

[ ] 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires "Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . . " From the wording of 37 C.F.R. § 1.28(b), (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

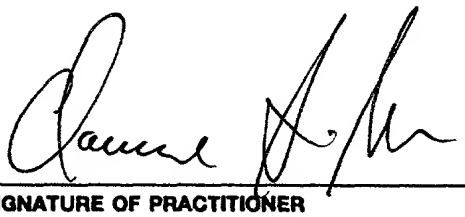
16. Instructions as to Overpayment

NOTE: ". . . Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

☒ Credit Account No. 16-1350

☐ Refund

SEND ALL CORRESPONDENCE TO:



SIGNATURE OF PRACTITIONER

Clarence A. Green

(type or print name of attorney)

PERMAN & GREEN, LLP

P.O. Address

425 Post Road, Fairfield, Connecticut 06430

Reg. No. 24,622

Tel. No. (203) 259-1800

Customer No. 2512

☐ **Incorporation by reference of added pages**

(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)

☐ Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added _____

☐ Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added _____

☐ Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.

Number of pages added _____

☐ Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added _____

☒ **Statement Where No Further Pages Added**

(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)

☒ This transmittal ends with this page.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Express Mail No.: EL336865452US
In re Application of: THEIMER et al.
SERIAL NUMBER: EXAMINER:
FILING DATE: Herewith ART UNIT:
TITLE: METHOD FOR INPUTTING DATA INTO A SYSTEM
ATTORNEY DOCKET NO.: 473-009548-US(PAR)

The Commissioner of Patents and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Please amend the above-identified, enclosed patent application as follows:

IN THE CLAIMS:

Please amend Claims 3, 4, 7, 8, 10, 11, 12, 14 and 16 as shown below.

Claim 3, line 1, delete "or 2".

Claim 4, line 1, delete "or 2".

Claim 7, line 1, delete "or 6".

Claim 8, line 1, delete "Claims 4 to 7" and insert --Claim 4--.

Claim 10, line 1, delete "or 9".

Claim 11, line 1, delete "Claims 3 to 10" and insert --Claim 3--.

Claim 12, lines 1 and 2, delete "one of the preceding claims" and insert --Claim 1--.

Claim 14, line 1, delete "Claims 1 to 11" and insert --Claim 1--.

Claim 16, line 1, delete "or 15".

Claim 17, line 1, delete "Claims 1 to 11" and insert --Claim 1--.

REMARKS

Please enter this preliminary amendment prior to calculation of the fees.

Respectfully submitted,

Clarence A. Green, Reg. No. 24,622
Perman & Green, LLP
425 Post Road
Fairfield, CT 06430
(203) 259-1800
Customer No.: 2512

12 Feb 00
Date

Case: NC 13164/25 332

Nokia Mobile Phones Ltd.

Keilalahdentie 4
02150 Espoo
Finland

Method for inputting data into a system

Description

The invention relates to a method for inputting data into a system.

The increasing further development of information and communications technology has resulted in ever more information and communications systems whose operation and use mean that it is necessary to input not only individual terms or commands, but also complete data records. Systems requiring such complex data inputs include, for example, navigation systems, which guide the user from his original location to a destination point, traffic information systems, e-mail services or the like.

Since the input means available for inputting data into a system, for example into a navigation system installed in a vehicle, are generally limited to simple keypads with a small number of keys, for example with a block of twelve keys, turn-and-push controls, so-called soft keys, that is to say keys whose function is assigned to them depending on program execution, or the like, it is difficult and time-consuming to input complete data records.

For example, with a known navigation system, the postal address of the destination has to be input, together with the house number, road name and town or area name. A push-and-turn control is provided for this purpose, using which individual letters can be selected and input from a list of displayed letters. In order to make it easier for the user to make an input in this case, once one letter has been input, the only letters which are still displayed are those which sensibly complement the previous letter sequence in terms of a town or road name to be selected and stored in the navigation system database. In this case, as soon as the input letter sequence corresponds to only one possible town or road name, the rest of the letters are added automatically, so that the user can continue to

input the next term, until the data required to define the destination point have been input.

Such an input dialogue between a navigation system and a user is, however, rather tedious.

Input dialogues based on voice input have also already been proposed in order to avoid the limitations of the input dialogue using the limited, tactile input means.

In such a dialogue, the navigation system is first of all activated by a voice command "navigation system". The system responds with an audible or visual report "system ready", and then uses the input request "please spell out the town name" to request the user to spell out the name of the desired town. The user then inputs the town name, for example "E-R-D-I-N-G" as a letter string. The system then reports back the identified town name "Erding" as a word or as a letter string, and asks the user to confirm that the input is correct. If the system returns the input incorrectly, and the user uses the voice command "no" to reject the identified input, the input dialogue reverts to inputting the town name, and requests the user to spell out the town name once again.

If the town name has been identified correctly, the same process is repeated to input the road name, and then to input the house number.

Although such a voice input process is not subject to the limitations of input means such as keypads or turn-and-push controls, the strict dialogue structure means that there is a lack of simple correction facilities. Furthermore, the voice reports from the system, which always remain the same, are annoying and time-consuming for a practised user.

Against this background, the invention is based on the object of providing a method for inputting data into a system, which simplifies the inputting process, in particular voice inputs for data into the system, and thus simplifies and speeds up use of the system.

This object is achieved by the method according to Claim 1.

Thus, according to the invention, in response to an input by a user, the system determines one or more terms, which are as appropriate as possible for this input, as identified terms, defines a confidence value for each of these identified terms, and deals with or processes the terms associated with an input further, taking account of their confidence values. The confidence value is in this case advantageously a value from an interval between a number, preferably 1, corresponding to reliable identification, and that for an input which cannot be identified, corresponding to 0, including these values.

The confidence values in this case describe the extent to which the identified term matches the input. The process of establishing the confidence value is generally known from the prior art and can be read, for example, in the book "Fundamentals of Speech Recognition", L. Rabiner, B-H Juang, 1993, Prentice Hall PTR, 1993, Engelwood Cliffs, Chapter 4.

Once a term has been input by voice, either as a word or as a character string, not only an individual term is thus present, but a series of terms associated with the input are defined, which can then be dealt with further as a function of the confidence values, that is to say they can be displayed or announced, for example.

In a first refinement of the invention, the identified terms are announced and/or displayed to a user as a system response, starting with the term identified as being the most reliable, on the basis of their confidence values. This allows the user to select the correct term from the identified terms.

Thus, in response to his input, the user does not just receive a single identified term, but is offered the option, if the first-mentioned term is incorrect, to look for the correct term from the other identified terms. Thus, the input need be repeated only

if none of the identified terms matches the user's intended input.

If the input into a system is used for selection of a data record, comprising a number of terms or data items, from a number of data records stored in the system, then one advantageous development of the invention provides that, for each identified term, those data records which are appropriate for the identified terms are looked for in a list of stored data records.

When terms or data are being input using a form-based dialogue structure, it is in this case particularly advantageous for the input to be completed by a data record appropriate for the identified term. Thus, for example, when inputting the destination point into a navigation system, if an address were to be input which is already stored in a personal address book, then a name associated with this address is, for example, input first of all, and the appropriate data record, that is to say the address, corresponding to the identified name, is then looked for, and the form is completed using the details from the data record.

In this case, the dialogue form may be completed automatically as soon as only one data record matches the input terms following the process of inputting one or more terms, for example "Müller", "Hamburg". However, according to the invention, it is preferable for the data input to be completed in response to a request signal. Another expedient refinement of the invention provides that the number of data records found can be reduced by inputting one or more further terms.

A particularly advantageous refinement of the invention is distinguished in that each stored data record is assigned a probability value, which describes the probability of the data record being used again. This probability value for a data record corresponds to the ratio of the number of times this data record has

been used to the total number of times all the data records have been used.

In the situation where the system identifies a number of terms in response to an input, with each of which one or more data records are associated, the invention furthermore provides that an announcement/display sequence of the data records is defined as a function of their probability values and the confidence values of the associated terms.

Thus, for example, if a number of stored data records match an identified term, then that data record whose probability value is the highest is displayed first of all. This allows a user of a navigation system who has stored a number of addresses under the name "Müller" to select the address of that Mr/Mrs Müller who he visits most frequently, simply by inputting the term "Müller" when inputting into the navigation system the destination point desired at that time. If the user wishes to enter as the destination point another address stored as a data record under the term "Müller" then he then either just has to scroll through the determined data records, or he can enter a further term, which specifies the data record for the desired address more accurately, in advance.

The identified terms or the data records found are in this case expediently announced and/or displayed individually and successively, or as a selection list for confirmation or selection.

When using voice input, it is particularly advantageous for the confidence value of voice recognition to be established in the normal manner.

In order to improve the voice recognition confidence when using voice input, another development of the invention provides that the voice input by a user is first of all subjected to speaker identification, and that the subsequent voice recognition process is carried out taking account of the result of the speaker identification.

Another refinement of the invention provides that the input is made via an alphanumeric input device, with the terms entered in this way first of all being assigned the confidence value for reliable identification.

However, since different inputs or typing errors can occur frequently, for example with rotary digit or letter selectors or the like, without the user making the input actually identifying them when inputting alphanumeric terms via a keypad or some other tactile input means, it is particularly expedient for an incorrectly alphanumerically input term, which has already frequently been input incorrectly in a manner specific to a particular user, is assigned a lower confidence value as a function of input-specific error statistics. Furthermore, it is expedient if an incorrectly alphanumerically input term which has already frequently been input incorrectly in a manner specific to a particular user, is automatically corrected in this manner, with the corrected term being assigned a confidence value which is lower than the confidence value for reliable identification.

Another refinement of the invention provides for the input to be an image input.

The invention will be explained in more detail in the following text using the drawing by way of example, in which:

Figure 1 shows a schematic block diagram of a user interface for carrying out the method according to the invention, with various connected applications.

Figure 2 shows a schematic, simplified flowchart of a first refinement of the method according to the invention, and

Figure 3 shows a schematic, simplified flowchart of a second exemplary embodiment of the method according to the invention.

As is shown schematically in Figure 1, a processing circuit 10 of a user interface has connected to it, as input means, a video camera 11 having a

downstream image recognition device 12, a keypad 13 which may be, for example, a block of twelve keys, a turn-and-push control 14 and a microphone 15 with associated voice recognition 16. In this case, in order to improve the voice recognition confidence, a speaker identification device 17 is in this case advantageously connected between the microphone 15 and the voice recognition 16 and assigns a speaker signal to the voice signal supplied from the microphone 15, using which the voice signal can be processed in the voice recognition device 16, taking account of the specific speaker characteristics.

A loudspeaker 18 is connected to the processing circuit 10 as output means, and a monitor 19 is connected as visual display means via a driver 20 for audible signals or a driver 21 for visual signals.

Furthermore, the processing circuit 10 is connected to applications 22, 23 which may be, for example, a navigation system, a road information system, an e-mail service, a fax service, a mobile radio service or the like. Each application 22, 23 may in this case be provided with its own database for data records to be used in the application. The various databases may in this case be stored either in an application-specific memory, or, as in the case of the illustrated user interface, in an appropriate data memory 24. It is particularly expedient to provide a database whose data records can be used by a number of applications. For example, apart from someone's name and telephone number, the data records in such a database may also have his postal address, his house number, road, town or area, and the corresponding GPS data. Such a data record could also include statistical data, for example indicating how frequently the corresponding person has been called, or how frequently this data record has been used for route planning to the place where that person lives.

In addition, it is also possible for application-specific statistical data to be stored in a

memory area 25 for application-statistical data containing, for example, the absolute and relative usage frequency for each data record. Furthermore, a memory area 26 can be provided in which user-specific input errors and their frequency are stored.

Here, for example, it is possible to store specific typing errors, for example number inversions and their frequency, that is to say to store the fact that "89" is frequently input instead of "98" when making an input via the keypad 13 or the turn-and-push control 14. If statistical analysis in this case identifies that an input "89" is changed to "98" with a relative probability of, for example, 65%, then such a correction can be made automatically, with a confidence value of 0.65 at the same time being assigned to the term "98" which has been changed in this way. On the other hand, if the change frequency value is less than 50%, for example 45%, this value can be left unchanged and assigned a confidence value of, for example, 0.55.

A first exemplary embodiment of the method according to the invention for inputting data into a system will be explained in more detail in the following text using Figure 2 by way of example. In this case, a navigation system will be described as a system. However, the method according to the invention can also be used successfully with other systems in which individual terms or a number of terms have to be input in order to select data records stored in a database or to produce data records to be stored in the database.

If, for example, a user who has access to a route plan and destination routing system or a navigation system wishes to access this navigation system, then, after switching the system on, he inputs the command "navigation system" (step S11). Depending on the respective actual equipment in a user interface, this input may be made in various ways. Only voice input will be described in the following text here.

However, the fundamental structure of the method is not dependent on the nature of the input.

As soon as the navigation system is ready after inputting the command in step S11, it issues the input request "input destination" to the user, in step S12, as confirmation. The output in this case may either be announced or else displayed. An announcement and display may in this case also be produced simultaneously. The following text refers only to an announcement, although this does not preclude the alternative or supplementary display of an output.

Once the user has been requested to input the destination for the route plan that he would like to have produced, he makes the voice input in step S13. In this case, the name of the destination, for example "Erding" can be input as the letter sequence "E-R-D-I-N-G" or as the spoken word "ERDING". The acoustic signal received by the microphone 15 during the voice input in step S13 is first of all supplied as a voice signal to a speaker identification device 17, and then to voice recognition 16. The voice recognition in this case takes account of the result of the speaker identification to determine, in a known manner, the terms identified on the basis of the input. For example, from the input "ERDING", the voice recognition identifies the terms "Erding" with a confidence value of, for example, 0.8, "Erting" with a confidence value of 0.7, and "Ärding" with a confidence value of 0.6. In step S14, the identified terms are then sorted on the basis of their confidence values. Then, in step S15, the terms are announced in the sequence of their confidence values. The term identified to have the highest confidence value, that is to say "Erding" with a value of 0.8 here, is in this case the first to be announced or displayed. In step S16, the system uses, for example, the input request "is 'Erding' correct" to request confirmation or rejection of the identified term.

If the term is correct and has been confirmed by an appropriate voice input by the user, a dialogue is carried out in step S17 to determine whether the input is complete, that is to say whether all the terms to be input have been input, or whether there are any further terms to be input. In the latter case, the user is requested by the input request "next term" in step S18 to continue with the voice input (step S13).

However, if the input is complete, then the complete input is sent to the navigation system, and the input dialogue is terminated.

If the term announced in step S15 is not the term desired by the user, then, following the confirmation request in step 16, he rejects this term by "no", after which a check is carried out in step S19 to determine whether any further terms have been identified. If this is the case, then the next term is announced in step S15.

This procedure is repeated until either an identified term has been confirmed as being appropriate by the user, or all the terms have been rejected. Instead of successive announcements of the identified terms, if a display is used, all the terms can also be displayed in the form of a selection list. The user can then scroll through the list and select the desired term directly, or can reject the entire list as being incorrect.

If, once all the terms have been announced, all have been rejected as being incorrect, then the method jumps after step S19 to step S20, in which the note "term not identified" was output. The input request "repeat input" is then announced in order to inform the user that the system has returned once again for voice input in step S13.

In a manner which will not be described in any more detail, the user has the option after each input request to input a terminate command either as a voice command or via an appropriate terminate key. Pushing

the turn-and-push control 14 may in this case be interpreted, for example, as a terminate command.

Not only destination inputs for a navigation system may advantageously be carried out in the described manner, but also the selection of specific data records from stored data records.

The simplest example of this is a personal telephone directory, which is stored electronically. However complex data records may also be selected in order, for example, to simplify the process of inputting destinations in a navigation system.

Such a method according to the invention, in which one data record can be selected from a large number of stored data records, in order to fill out a dialogue form of an application, that is to say for example the input requests "house number", "road" and "town or area" when inputting a destination into a navigation system, will be explained in the following text with reference to Figure 3. After activation of the application (see steps S11 and S12 in Figure 2), the voice input and voice recognition are carried out in step S13'. The terms identified on the basis of the input are then provided, together with their confidence values, in step S31 so that, in step S32, the data records which match the identified terms can be determined from the database, in step S32. Then, in step S33, an overall probability is calculated from the confidence value of the identified term and the probability value of the matching data record.

Thus, once a user has used predetermined voice commands, which have been identified without any problems by the voice recognition, to enter the destination under the name "Müller", in order to select for the destination input the data record associated with Mr/Mrs Müller, the voice recognition identifies the term "Möller" with a confidence value of 0.9 and, at the same time, the term "Müller" with a confidence value of 0.8, and the term "Mahler" with a confidence value of 0.5. Thus, in step S31, these identified terms

are provided together with their confidence values for the process of determining the data records that match this, in step S32. In this case, for example, it is first of all found that there is no Mahler in the data records. However, data records do exist for the names "Müller" and "Möller", and it is known from the application-specific statistical data that both data records have been used for route planning in the past and that, in the last month, for example, a route to Mr/Mrs Möller has been calculated in 10% of all the route plans, and a route Mr/Mrs Müller has been calculated in 20% of all the route plans.

These frequency values are associated with the data records so that the overall probability can be calculated in step S33. The confidence value of the identified term is multiplied by the relative usage frequency of the respective data record for the overall probability, which indicates which of the determined data records shall be requested, and with what probability. In the illustrated example, the overall probability of the data record associated with Mr/Mrs Möller is 0.09, since the confidence value 0.9 is multiplied by a usage frequency value of 0.1 (10%). In a corresponding manner, the confidence value 0.8 and the usage frequency value 0.2 (20%) are used to calculate an overall probability of 0.16 for the data record associated with Mr/Mrs Müller.

On the basis of the higher calculated overall probability that the user would like to obtain a route plan to Mr/Mrs Müller, the data record of Mr/Mrs Müller is first of all used as the destination address in step S34, in which the data records are displayed organized on the basis of their overall probability. Once the user has identified in step S16' that the displayed data record is that desired for Mr/Mrs Müller, this is confirmed by a voice command or via a confirmation key. On the basis of the confirmation, the data record can be transferred directly to the application, that is to say the navigation system, as the destination for route

planning (step S35). However, as is shown in Figure 3, the system can once again be asked in advance, in step S36, whether the data record should be processed. If this is the case, then the data record is processed in step S37. Otherwise, the method returns to step S35. After completion of the processing, it is then possible to carry out an additional check in step S38 to determine whether the processed data record should be sent to the navigation system or should merely be stored.

However, if the data record associated with Mr/Mrs Möller does not include the desired destination address, then the method jumps in step S16' to step S39, in which a check is carried out to determine whether there are any other data records. If this is the case in the present example here, then the data record for Mr/Mrs Möller is displayed in step S34. If this data record is not the desired one either, then a check is once again carried out in step S39 to determine whether there are any other data records. If this is not the case, then a check is carried out in step S40 to determine whether there are still any terms which have been identified and for which it has not been possible to find any data records. If this is the case, as in the example, that term is displayed in step S41. Once, in step S42, the user has confirmed the displayed term as that which he desired, the system asks, in step S43, whether a new data record should be used. If this is the case, then the method continues to step S37, otherwise, the input method is ended.

If, in step S42, the user rejects the displayed term as being incorrect, then the method returns to step S40 until there are no more identified terms. In this case, corresponding to step S20, a note is then issued which indicates that the term has not been identified, in order that the input method can then be ended.

However, after step S20 and after step S43, it is also possible to return to the voice input in step S13', and to request the user to make another input.

When a data record is selected, in order to reduce a list of data records which has been found after inputting a term, it is also possible in accordance with the method explained with reference to Figure 3 to input a further term, and to look for this term only in the list which has already been obtained. If, for example, the name Müller has been correctly identified and a number of data records have been associated with the name Müller, then the desired one of these data records can be determined by an additional input, as explained above.

With the method according to the invention, it is also possible to make the selection of data records from a database on the basis of one or more terms which have been input, and to complete an input form or an input dialogue like a form only when the user inputs an appropriate request signal acoustically, visually or by touch via the keypad 13 or the turn control 14. This allows the user to input two or more terms from the start, in order to simplify the search for the desired data record and the automatic completion of the input.

Instead of the described pure voice input, it is also possible to make a combined voice and keypad input. In this case, the confidence value 1 for key input can be reduced by the system if it is known on the basis of the input-specific error statistics, which are stored in the memory area 26, that the input has a certain amount of uncertainty associated with it on the basis that typing errors and/or numerical inversions by the user have frequently be identified. In this case, as has already been explained above, it is also possible to correct inversions of numbers or letters, and other typing errors, if required.

Using the video camera 11 and the downstream image identification 12, it is possible to input individual commands as well as individual letters by

using gestures or the like. For example, an open hand could be defined as a command to terminate an operation. Quantitative values can also be recorded by the start and end of a hand movement, with the values determined in each case likewise being associated with a confidence value.

The method according to the invention and described with reference to Figure 3 thus makes it possible to carry out even complex dialogues quickly and reliably since the dialogues and dialogue forms are automatically completed on the basis of already stored data records, which are selected on the basis of the specified terms, so that the user need not continually input data once again after they have already been input.

Patent Claims

1. Method for inputting data into a system, in which

- in response to an input by a user, one or more terms, which are as appropriate as possible for this input, are determined as identified terms,
- a confidence value is defined for each of these identified terms, and
- the terms associated with an input are dealt with further, taking account of their confidence values.

2. Method according to Claim 1, **characterized in that** the confidence value is a value from an interval between a number, preferably 1, corresponding to reliable identification, and that for an input which cannot be identified, corresponding to 0, including these values.

3. Method according to Claim 1 or 2, **characterized in that** the identified terms are announced and/or displayed to a user as a system response, starting with the term identified as being the most reliable, on the basis of their confidence values.

4. Method according to Claim 1 or 2, **characterized in that,** for each identified term, those data records which are appropriate for the identified terms are looked for in a list of stored data records.

5. Method according to Claim 4, **characterized in that,** when data are being input, the input is completed by a data record appropriate for the identified term, using a form-based dialogue structure.

6. Method according to Claim 5, **characterized in that** the data input is completed in response to a request signal.

7. Method according to Claim 5 or 6, **characterized in that** the number of data records found can be reduced by inputting one or more further terms.

8. Method according to Claims 4 to 7, **characterized in that** each stored data record is assigned a probability value, which describes the probability of the data record being used again.

9. Method according to Claim 8, **characterized in that** the probability value for a data record corresponds to the ratio of the number of times this data record has been used to the total number of times all the data records have been used.

10. Method according to Claim 8 or 9, **characterized in that** an announcement/display sequence of the data records is defined as a function of their probability value and the confidence value of the associated term.

11. Method according to Claims 3 to 10, **characterized in that** the identified terms are announced and/or displayed individually and successively, or as a selection list for confirmation or selection.

12. Method according to one of the preceding claims, **characterized in that,** if the input is a voice input, the confidence value is established in the normal manner for voice recognition.

13. Method according to Claim 12, **characterized in that** the voice input by a user is first of all subjected to speaker identification, and in that the subsequent voice recognition process is carried out taking account of the result of the speaker identification.

14. Method according to Claims 1 to 11, **characterized in that** the input is made via an alphanumeric input device, with the terms entered in this way first of all being assigned the confidence value for reliable identification.

15. Method according to Claim 14, **characterized in that** an incorrectly alphanumerically input term, which has already frequently been input incorrectly in a manner specific to a particular user, is assigned a

lower confidence value as a function of input-specific error statistics.

16. Method according to Claim 14 or 15, **characterized in that** an incorrectly alphanumerically input term, which has already frequently been input incorrectly in a manner specific to a particular user, is automatically corrected, with the corrected term being assigned a confidence value which is lower than the confidence value for reliable identification.

17. Method according to Claims 1 to 11, **characterized in that** the input is an image input.

Abstract

Method for inputting data into a system

The invention relates to a method for inputting data into a system. In order to make it easier for users to input data, the invention provides that, in response to an input by a user, one or more terms which are as appropriate as possible for this input are determined as identified terms, that a confidence value is defined for each of these identified terms, and that the terms associated with an input are dealt with further, taking account of their confidence values.

Fig. 1

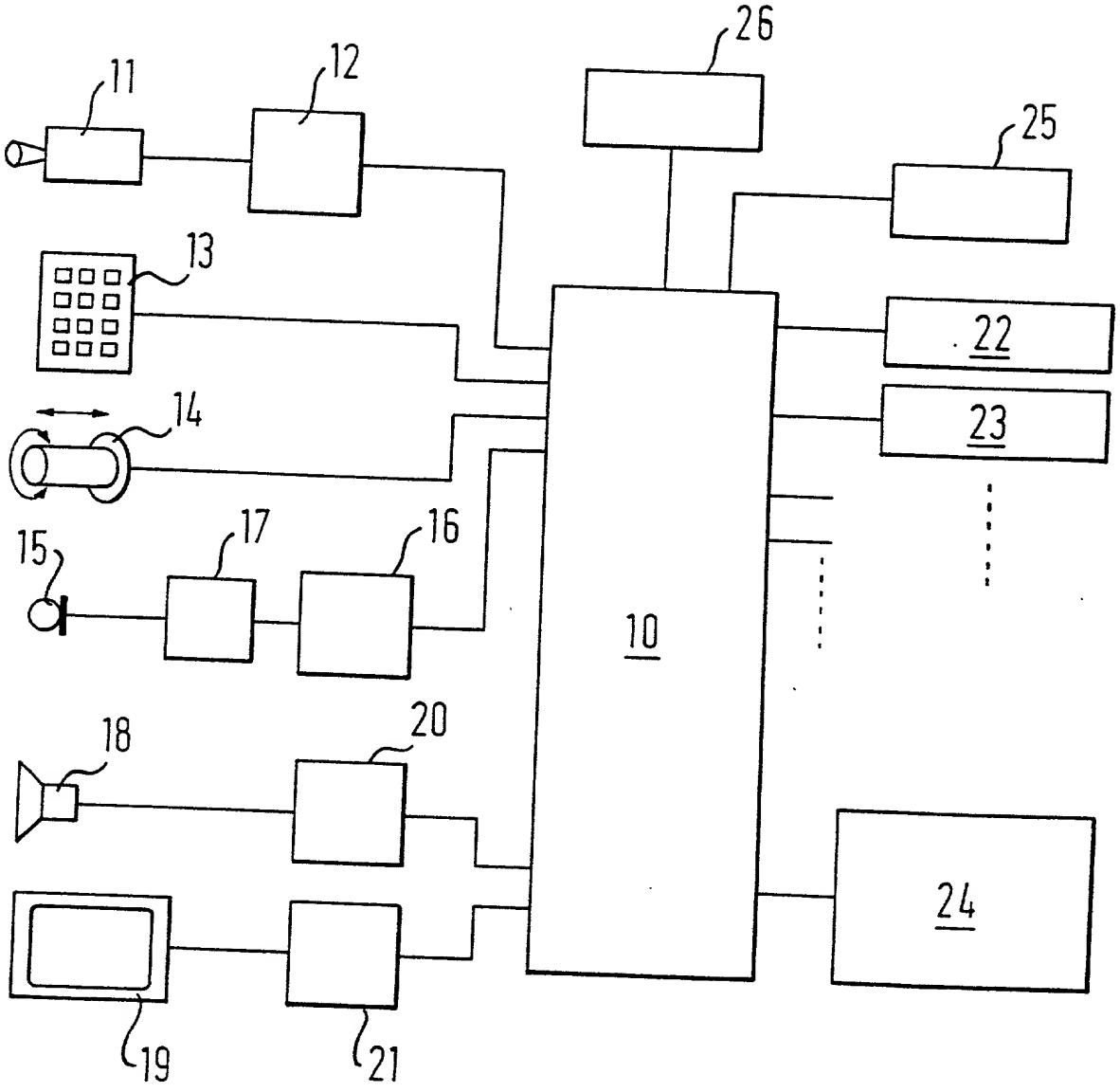


Fig. 2

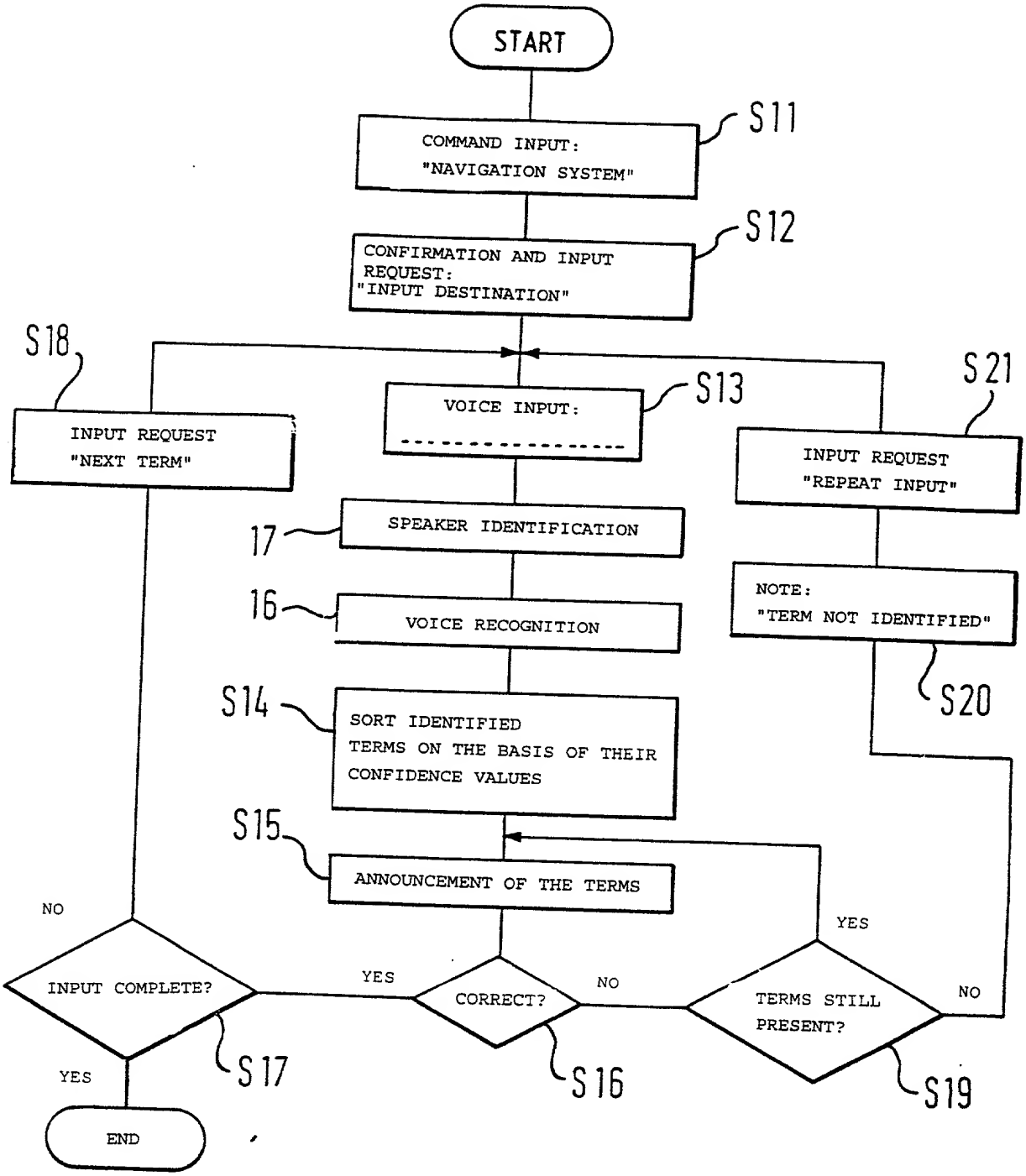
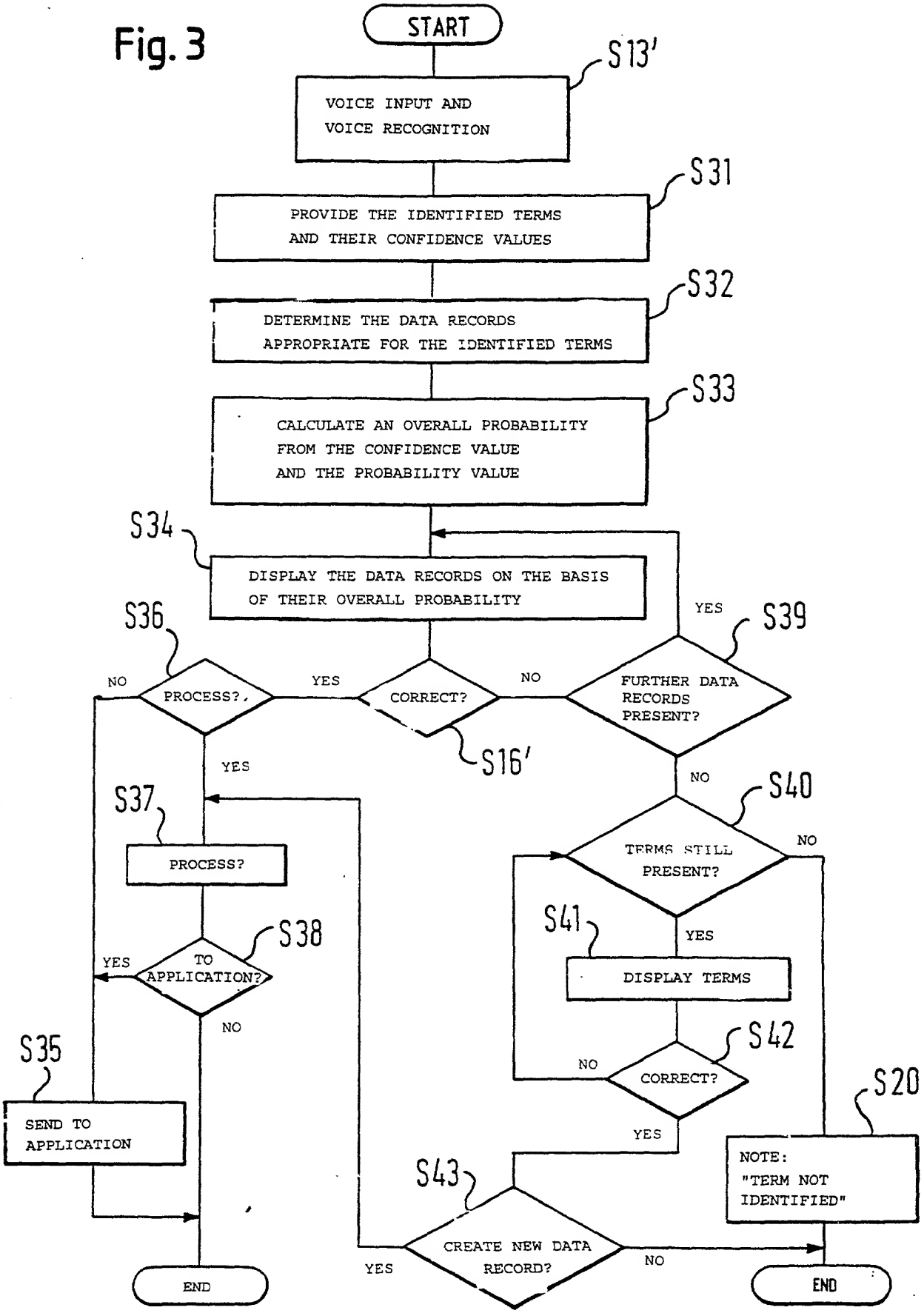

START
COMMAND INPUT:
"NAVIGATION SYSTEM"
S11
CONFIRMATION AND INPUT REQUEST:
"INPUT DESTINATION"
S12
S18
INPUT REQUEST
"NEXT TERM"
VOICE INPUT:
S13
S21
INPUT REQUEST
"REPEAT INPUT"
17
SPEAKER IDENTIFICATION
16
VOICE RECOGNITION
NOTE:
"TERM NOT IDENTIFIED"
S20
S14
SORT IDENTIFIED TERMS ON THE BASIS OF THEIR CONFIDENCE VALUES
S15
ANNOUNCEMENT OF THE TERMS
NO
YES
INPUT COMPLETE?
YES
CORRECT?
NO
TERMS STILL PRESENT?
NO
YES
S17
S16
S19
END

Fig. 3


START
S13'
VOICE INPUT AND VOICE RECOGNITION
S31
PROVIDE THE IDENTIFIED TERMS AND THEIR CONFIDENCE VALUES
S32
DETERMINE THE DATA RECORDS APPROPRIATE FOR THE IDENTIFIED TERMS
S33
CALCULATE AN OVERALL PROBABILITY FROM THE CONFIDENCE VALUE AND THE PROBABILITY VALUE
S34
DISPLAY THE DATA RECORDS ON THE BASIS OF THEIR OVERALL PROBABILITY
S36
PROCESS?
NO
YES
CORRECT?
S16'
NO
YES
S39
FURTHER DATA RECORDS PRESENT?
YES
NO
S40
TERMS STILL PRESENT?
NO
YES
S41
DISPLAY TERMS
S42
CORRECT?
NO
YES
S20
NOTE: "TERM NOT IDENTIFIED"
S37
PROCESS?
S38
TO APPLICATION?
YES
NO
S35
SEND TO APPLICATION
S43
CREATE NEW DATA RECORD?
YES
NO
END
END